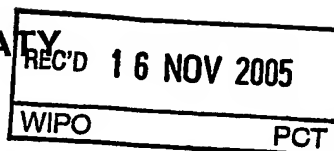




## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference GML2803	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB2003/002600	International filing date (day/month/year) 17.06.2003	Priority date (day/month/year) 13.06.2003
International Patent Classification (IPC) or both national classification and IPC B64D15/20		
Applicant AEROSPACE COMPOSITE TECHNOLOGIES LTD et al		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>		
Date of submission of the demand  12.01.2005	Date of completion of this report  14.11.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Salentiny, G  Telephone No. +49 89 2399-8337 	

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB2003/002600

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, Pages

1-13 as originally filed

### Claims, Numbers

1-24 as originally filed

### Drawings, Sheets

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB2003/002600

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 15-24

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 15-24 are so unclear that no meaningful opinion could be formed (*specify*):

**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the Standard.

☐ the computer readable form has not been furnished or does not comply with the Standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	8-14
	No: Claims	1-7
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB2003/002600

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see separate sheet

**Re Item III : Non-establishment of opinion**

The data processing equipment claimed in claims 15-24 is entirely defined with reference to the ice detection apparatus and its components which are however not part of the claimed subject-matter. This introduces a clarity problem (Art. 6 PCT) as the subject-matter for which the applicant seeks protection for is undefined. It is however noted that figure 4 of D1 discloses a data processing equipment for an ice detection apparatus receiving input from various sensor elements. The system disclosed in D1 furthermore comprises comparator means (90) for the detection of ice.

**Re Item V : Reasoned statement under Article 35(2) PCT**

Reference is made to the following documents:

D1: US-A-5 484 121 (Padawer et al., 16.01.1996)

D2: US-A-5 748 091 (John Jungwoo Kim, 05.05.1998)

**To claims 1-7**

Claim 1 lacks clarity (Art. 6 PCT) as there is no interaction stated between the electromagnetic radiation emitter and the array of (electromagnetic radiation) sensors. The wording of the claim does indeed not mention that the ice detection apparatus uses the array of sensors for actually sensing diffused electromagnetic radiation from this very single emitter, nor does it address the presence of a data processing equipment which receives, in use, signals representative of the intensity of diffused radiation from the plurality of sensors, thereby evaluating the type of ice accretion. The data processing equipment making the link between the emitter and the claimed array of sensors is absent in the claim; this feature is however considered an essential feature which aims at monitoring the distribution of the diffused radiation along the array of sensors.

Claiming only a sensor distribution can however be looked upon as being known from various prior art documents (e.g. D1, figure 1) and the subject-matter of claim 1 thus appears to lack novelty in the sense of Article 33(2) PCT.

The subject-matter of claim 1 lacks an inventive step in view of the teachings of D2. This

prior art document teaches the use of sensors positioned at different distances from an emitter (column 4, line 13 - column 5, line 10). This arrangement is used to detect the profile of the reflected light in order to establish the thickness of accreted ice. Claim 1, departing from the teachings of D2, claims the emitter to be located '*intermediate*' of the array of sensors. The location of the sensors at different distances from the emitter and the effect achieved therewith is therefore known in the art. The particular arrangement of the emitter as claimed is looked upon as representing merely one of several straightforward possibilities for positioning the sensors with regard to the emitter. Such a positioning is known in the art (e.g. from D1, figure 3e).

The additional features of claims 2-5 reflect mere design options for the positioning of the sensors at different distances from the emitter. An inventive activity in the sense of Article 33(3) PCT may not be attributed to any of these configurations.

Flush mounted sensors are well known in the art (e.g. D1, fig. 3d). D1 also discloses an apparatus for detecting ice accretion on an aircraft surface (Title). Art 33(3) PCT is thus not met for the subject-matter of claims 6 and 7.

To claims 8-14

None of the documents of the search report discloses a method of analysing the distribution of diffused radiation in order to establish the **type** of accreted ice. The method claimed in claims 8-14 is therefore considered to meet the novelty (Art. 33(2) PCT) and inventive step (Article 33(3) PCT) requirements set out in the PCT.